



## SEQUENCE LISTING

<110> ALDAZ, MARCELO C.  
BEDNAREK, ANDRZEJ

<120> WWOX: A PUTATIVE TUMOR SUPPRESSOR GENE MUTATED IN  
MULTIPLE CANCERS

<130> UTSC:671US

<140> 09/978,318

<141> 2001-10-15

<150> 60/240,277

<151> 2000-10-13

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<170> PatentIn Ver. 2.1

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| Asp | Ser | Glu | Asp | Glu | Leu | Pro | Pro | Gly | Trp | Glu | Glu | Arg | Thr | Thr | Lys |     |
|     |     | 15  |     |     |     |     | 20  |     |     |     |     | 25  |     |     |     |     |
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| Glu | His | Pro | Lys | Thr | Gly | Lys | Arg | Lys | Arg | Val | Ala | Gly | Asp | Leu | Pro |     |
| 45  |     |     |     |     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |
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| Tyr | Gly | Trp | Glu | Gln | Glu | Thr | Asp | Glu | Asn | Gly | Gln | Val | Phe | Phe | Val |     |
|     |     |     |     | 65  |     |     |     | 70  |     |     |     |     | 75  |     |     |     |
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| Asp | His | Ile | Asn | Lys | Arg | Thr | Thr | Tyr | Leu | Asp | Pro | Arg | Leu | Ala | Phe |     |
|     |     |     | 80  |     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |
| act | gtg | gat | gat | aat | ccg | acc | aag | cca | acc | acc | cgg | caa | aga | tac | gac | 457 |
| Thr | Val | Asp | Asp | Asn | Pro | Thr | Lys | Pro | Thr | Thr | Arg | Gln | Arg | Tyr | Asp |     |
|     |     | 95  |     |     |     |     | 100 |     |     |     |     | 105 |     |     |     |     |
| ggc | agc | acc | act | gcc | atg | gaa | att | ctc | cag | ggc | cgg | gat | ttc | act | ggc | 505 |
| Gly | Ser | Thr | Thr | Ala | Met | Glu | Ile | Leu | Gln | Gly | Arg | Asp | Phe | Thr | Gly |     |
|     | 110 |     |     |     |     | 115 |     |     |     |     | 120 |     |     |     |     |     |
| aaa | gtg | gtt | gtg | gtc | act | gga | gct | aat | tca | gga | ata | gca | aca | ggg | agc | 553 |
| Lys | Val | Val | Val | Val | Thr | Gly | Ala | Asn | Ser | Gly | Ile | Ala | Thr | Gly | Ser |     |
| 125 |     |     |     |     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |
| tgc | cac | cac | cgt | gta | ctg | tgc | tgc | tgt | ccc | aga | act | gga | ggg | tct | ggg | 601 |
| Cys | His | His | Arg | Val | Leu | Cys | Cys | Cys | Pro | Arg | Thr | Gly | Gly | Ser | Gly |     |
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| Arg | Asp | Val | Leu | Gln | Gln | Leu | Leu | Pro | Leu | His | Ala | Leu | Thr | Arg | Ser |     |
|     |     |     | 160 |     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |
| tca | gag | cga | aga | gac | ggc | ccg | gac | cct | gtg | ggc | gct | cag | cga | gag | gct | 697 |
| Ser | Glu | Arg | Arg | Asp | Gly | Pro | Asp | Pro | Val | Gly | Ala | Gln | Arg | Glu | Ala |     |
|     |     | 175 |     |     |     |     | 180 |     |     |     |     | 185 |     |     |     |     |
| gat | cca | aga | acg | gct | tgg | cag | cca | gtc | cgg | cta | agt | gga | gct | cag | agc | 745 |
| Asp | Pro | Arg | Thr | Ala | Trp | Gln | Pro | Val | Arg | Leu | Ser | Gly | Ala | Gln | Ser |     |
|     | 190 |     |     |     |     | 195 |     |     |     |     | 200 |     |     |     |     |     |
| gga | tgg | gca | cac | aca | ccc | gcc | ctg | tgt | gtg | tcc | cct | cac | gca | agt | gcc | 793 |
| Gly | Trp | Ala | His | Thr | Pro | Ala | Leu | Cys | Val | Ser | Pro | His | Ala | Ser | Ala |     |
| 205 |     |     |     |     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |
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| Trp Glu Ala Gly Asn Ser Trp Gly Lys Val Ser Leu Phe Trp Gly Trp     |     |     |      |
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| Lys Thr Cys Leu Val Cys Arg Phe Arg Ile Ser Leu Glu Lys His Gln     |     |     |      |
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 Tyr Tyr Ala Asn His Thr Glu Glu Lys Thr Gln Trp Glu His Pro Lys  
 35 40 45  
 Thr Gly Lys Arg Lys Arg Val Ala Gly Asp Leu Pro Tyr Gly Trp Glu  
 50 55 60

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gln | Glu | Thr | Asp | Glu | Asn | Gly | Gln | Val | Phe | Phe | Val | Asp | His | Ile | Asn |  |
| 65  |     |     |     |     | 70  |     |     |     | 75  |     |     |     |     |     | 80  |  |
| Lys | Arg | Thr | Thr | Tyr | Leu | Asp | Pro | Arg | Leu | Ala | Phe | Thr | Val | Asp | Asp |  |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |  |
| Asn | Pro | Thr | Lys | Pro | Thr | Thr | Arg | Gln | Arg | Tyr | Asp | Gly | Ser | Thr | Thr |  |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |  |
| Ala | Met | Glu | Ile | Leu | Gln | Gly | Arg | Asp | Phe | Thr | Gly | Lys | Val | Val | Val |  |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |  |
| Val | Thr | Gly | Ala | Asn | Ser | Gly | Ile | Ala | Thr | Gly | Ser | Cys | His | His | Arg |  |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |
| Val | Leu | Cys | Cys | Cys | Pro | Arg | Thr | Gly | Gly | Ser | Gly | Arg | Asp | Val | Leu |  |
| 145 |     |     |     |     | 150 |     |     |     | 155 |     |     |     |     | 160 |     |  |
| Gln | Gln | Leu | Leu | Pro | Leu | His | Ala | Leu | Thr | Arg | Ser | Ser | Glu | Arg | Arg |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |
| Asp | Gly | Pro | Asp | Pro | Val | Gly | Ala | Gln | Arg | Glu | Ala | Asp | Pro | Arg | Thr |  |
|     |     | 180 |     |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |
| Ala | Trp | Gln | Pro | Val | Arg | Leu | Ser | Gly | Ala | Gln | Ser | Gly | Trp | Ala | His |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |
| Thr | Pro | Ala | Leu | Cys | Val | Ser | Pro | His | Ala | Ser | Ala | Arg | Ala | Gly | Pro |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |
| Leu | Pro | Asn | Val | Pro | Pro | Thr | Gln | Ile | Arg | Lys | Ser | Lys | Gly | Asn | Lys |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |
| Ser | Ser | His | Asn | Arg | Val | Lys | Asn | Leu | Lys | Tyr | Gln | Trp | Glu | Ala | Gly |  |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |  |
| Asn | Ser | Trp | Gly | Lys | Val | Ser | Leu | Phe | Trp | Gly | Trp | Ala | Arg | His | Arg |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |
| Ser | Leu | Cys | Phe | Leu | Val | Val | Ala | Cys | Leu | Lys | Val | Lys | Thr | Cys | Leu |  |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |
| Val | Cys | Arg | Phe | Arg | Ile | Ser | Leu | Glu | Lys | His | Gln | Gln | Phe | Ser | Phe |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |
| Phe | Tyr | Cys | Tyr | Arg | Ile | Ala |     |     |     |     |     |     |     |     |     |  |
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 tccacagtca gcc atg gca gcg ctg cgc tac gcg ggg ctg gac gac acg 169  
 Met Ala Ala Leu Arg Tyr Ala Gly Leu Asp Asp Thr  
 1 5 10  
 gac agt gag gac gag ctg cct ccg ggc tgg gag gag aga acc acc aag 217  
 Asp Ser Glu Asp Glu Leu Pro Pro Gly Trp Glu Glu Arg Thr Thr Lys  
 15 20 25

|   |      |
|---|------|
| gac ggc tgg gtt tac tac gcc aat cac acc gag gag aag act cag tgg   | 265  |
| Asp Gly Trp Val Tyr Tyr Ala Asn His Thr Glu Glu Lys Thr Gln Trp   |      |
| 30 35 40  |      |
| gaa cat cca aaa act gga aaa aga aaa cga gtg gca gga gat ttg cca   | 313  |
| Glu His Pro Lys Thr Gly Lys Arg Lys Arg Val Ala Gly Asp Leu Pro   |      |
| 45 50 55 60   |      |
| tac gga tgg gaa caa gaa act gat gag aac gga caa gtg ttt ttt gtt   | 361  |
| Tyr Gly Trp Glu Gln Glu Thr Asp Glu Asn Gly Gln Val Phe Phe Val   |      |
| 65 70 75  |      |
| gac cat ata aat aaa aga acc acc tac ttg gac cca aga ctg gcg ttt   | 409  |
| Asp His Ile Asn Lys Arg Thr Thr Tyr Leu Asp Pro Arg Leu Ala Phe   |      |
| 80 85 90  |      |
| act gtg gat gat aat ccg acc aag cca acc acc cgg caa aga tac gac   | 457  |
| Thr Val Asp Asp Asn Pro Thr Lys Pro Thr Thr Arg Gln Arg Tyr Asp   |      |
| 95 100 105  |      |
| ggc agc acc act gcc atg gaa att ctc cag ggc cgg gat ttc act ggc   | 505  |
| Gly Ser Thr Thr Ala Met Glu Ile Leu Gln Gly Arg Asp Phe Thr Gly   |      |
| 110 115 120   |      |
| aaa gtg gtt gtg gtc act gga gct aat tca gga ata ggg ttc gaa acc   | 553  |
| Lys Val Val Val Val Thr Gly Ala Asn Ser Gly Ile Gly Phe Glu Thr   |      |
| 125 130 135 140   |      |
| gcc aag tct ttt gcc ctc cat ggt gca cat gtg atc ttg gcc tgc agg   | 601  |
| Ala Lys Ser Phe Ala Leu His Gly Ala His Val Ile Leu Ala Cys Arg   |      |
| 145 150 155   |      |
| aac atg gca agg gcg agt gaa gca gtg tca cgc att tta gaa gaa tgg   | 649  |
| Asn Met Ala Arg Ala Ser Glu Ala Val Ser Arg Ile Leu Glu Glu Trp   |      |
| 160 165 170   |      |
| caa cag gga gct gcc acc acc gtg tac tgt gct gct gtc cca gaa ctg   | 697  |
| Gln Gln Gly Ala Ala Thr Thr Val Tyr Cys Ala Ala Val Pro Glu Leu   |      |
| 175 180 185   |      |
| gag ggt ctg gga ggg atg tac ttc aac aac tgc tgc cgc tgc atg ccc   | 745  |
| Glu Gly Leu Gly Gly Met Tyr Phe Asn Asn Cys Cys Arg Cys Met Pro   |      |
| 190 195 200   |      |
| tca cca gaa gct cag agc gaa gag acg gcc cgg acc ctg tgg gcg ctc   | 793  |
| Ser Pro Glu Ala Gln Ser Glu Glu Thr Ala Arg Thr Leu Trp Ala Leu   |      |
| 205 210 215 220   |      |
| agc gag agg ctg atc caa gaa cgg ctt ggc agc cag tcc ggc taa       | 838  |
| Ser Glu Arg Leu Ile Gln Glu Arg Leu Gly Ser Gln Ser Gly           |      |
| 225 230 235   |      |
| gtggagctca gagcggatgg gcacacacac ccgcctctgtg tgtgtcccct cagcaagtg | 898  |
| ccagggctgg gcccttcca aatgtccctc caacacagat ccgcaagagt aaaggaaata  | 958  |
| agagcagtca caacagagtg aaaaatctta agtaccaatg ggaagcaggg aattcctggg | 1018 |

gtaaagtatc acttttctgg ggctgggcta ggcataaggtc tctttgcttt ctggtggtgg 1078  
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 acagtctcag ttctcttgct ttcacattgt acttaaacct cctgctgtgc ctgcgcatcct 1678  
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 Tyr Tyr Ala Asn His Thr Glu Glu Lys Thr Gln Trp Glu His Pro Lys  
 35 40 45  
 Thr Gly Lys Arg Lys Arg Val Ala Gly Asp Leu Pro Tyr Gly Trp Glu  
 50 55 60  
 Gln Glu Thr Asp Glu Asn Gly Gln Val Phe Phe Val Asp His Ile Asn  
 65 70 75 80  
 Lys Arg Thr Thr Tyr Leu Asp Pro Arg Leu Ala Phe Thr Val Asp Asp  
 85 90 95  
 Asn Pro Thr Lys Pro Thr Thr Arg Gln Arg Tyr Asp Gly Ser Thr Thr  
 100 105 110  
 Ala Met Glu Ile Leu Gln Gly Arg Asp Phe Thr Gly Lys Val Val Val  
 115 120 125  
 Val Thr Gly Ala Asn Ser Gly Ile Gly Phe Glu Thr Ala Lys Ser Phe  
 130 135 140  
 Ala Leu His Gly Ala His Val Ile Leu Ala Cys Arg Asn Met Ala Arg  
 145 150 155 160  
 Ala Ser Glu Ala Val Ser Arg Ile Leu Glu Glu Trp Gln Gln Gly Ala  
 165 170 175  
 Ala Thr Thr Val Tyr Cys Ala Ala Val Pro Glu Leu Glu Gly Leu Gly  
 180 185 190  
 Gly Met Tyr Phe Asn Asn Cys Cys Arg Cys Met Pro Ser Pro Glu Ala

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     | 195 |     | 200 |     | 205 |     |     |     |     |     |     |     |     |     |     |
| Gln | Ser | Glu | Glu | Thr | Ala | Arg | Thr | Leu | Trp | Ala | Leu | Ser | Glu | Arg | Leu |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ile | Gln | Glu | Arg | Leu | Gly | Ser | Gln | Ser | Gly |     |     |     |     |     |     |
| 225 |     |     |     |     | 230 |     |     |     |     |     |     |     |     |     |     |

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23

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20

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28

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27

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| <400> 39<br>atggtcttta cttctccctg gcac                  | 24 |
| <210> 40<br><211> 29<br><212> DNA<br><213> Homo sapiens |    |
| <400> 40<br>acttctgcta agattacaga tacacactg             | 29 |
| <210> 41<br><211> 26<br><212> DNA<br><213> Homo sapiens |    |
| <400> 41<br>agttctttca ggtttaagga ataagc                | 26 |
| <210> 42<br><211> 28<br><212> DNA<br><213> Homo sapiens |    |
| <400> 42<br>tagatctaag tggatctcat tatagcag              | 28 |
| <210> 43<br><211> 25<br><212> DNA<br><213> Homo sapiens |    |
| <400> 43<br>acttggggta atttaagtgg tgctc                 | 25 |
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| <400> 44<br>aactttacac actccactga aatctcc               | 27 |
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| <400> 45<br>attaaacagg ggaattccga c                     | 21 |

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| <210> 46                    |    |
| <211> 21                    |    |
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| tctccaatt gtgttcatct g      | 21 |
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| <211> 19                    |    |
| <212> DNA                   |    |
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| <211> 23                    |    |
| <212> DNA                   |    |
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| <400> 48                    |    |
| tggtatgaga aaggggataa gtg   | 23 |
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| <211> 25                    |    |
| <212> DNA                   |    |
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| <400> 49                    |    |
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| <400> 51                    |    |
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| <211> 17                   |    |
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| <400> 54                   |    |
| tgtgtttcag atttgcc         | 17 |
| <210> 55                   |    |
| <211> 17                   |    |
| <212> DNA                  |    |
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| <400> 55                   |    |
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| <210> 56                   |    |
| <211> 17                   |    |
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| <400> 56                   |    |
| taaaccatag gggtcga         | 17 |
| <210> 57                   |    |
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| <400> 57                   |    |
| ctcattgcag cataaag         | 17 |
| <210> 58                   |    |
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| <212> DNA                  |    |
| <213> Homo sapiens         |    |

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| <400> 59<br>tatttttaag atttaca                          | 17 |
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<223> Description of Artificial Sequence: Synthetic  
Peptide

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Tyr Ala Asn His Thr Glu Glu Lys Thr Gln Trp Glu His Pro  
20 25 30

<210> 70  
<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
Peptide

<400> 70

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Pro | Tyr | Gly | Trp | Glu | Gln | Glu | Thr | Asp | Glu | Asn | Gly | Gln | Val | Phe |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Val | Asp | His | Ile | Asn | Lys | Arg | Thr | Thr | Tyr | Leu | Asp | Pro |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |